UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,491	09/21/2004	Arthur Rothstein	VIV/0013.02	5490

28653 7590 04/19/2007		EXAMINER
JOHN A. SMART		HOFFMAN, BRANDON S
708 BLOSSOM HILL RD., #201		
LOS GATOS, CA 95032	ART UNIT	PAPER NUMBER
	2136	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

		Application No.	Applicant(s)
Office Action Summary		10/711,491	ROTHSTEIN, ARTHUR
		Examiner	Art Unit	
		Brandon S. Hoffman	2136	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-47 and 49-60* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-47 and 49-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-47 and 49-60 are pending in this office action, claim 48 is canceled.

2.   Applicant's arguments, filed February 2, 2007, have been considered but are

moot in view of the new ground of rejection.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of
> matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the
> conditions and requirements of this title.

4.   Claim 31 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

5.   Claim 31 disclose a system for securing a program comprised of a plurality of

interoperable components, the system comprising: a module for extracting information

about a function of a first component of the program that is callable by at least one other

component of the program; a module for securing the extracted information; a validation

module for validating authenticity of a second component attempting to invoke the

function of the first component and a security module for blocking the attempt to invoke

the function of the first component if the second component cannot be authenticated.

Each module would reasonably be interpreted as software routines, which is a system

of software per se, and lacks the necessary physical articles or objects as components

to make it a machine or manufacture. Appropriate amendment to the claim is required.

Claim Rejections

6.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

Claim Rejections - 35 USC § 103

7.   Claims 1-19, 21-42, 45, and 49-60 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bodrov (U.S. Patent No. 6,802,006) in view of Ferguson (U.S. Patent

No. 5,933,826).

Regarding claims 1, 12, 14, 29-31, 45, 59, and 60, Bodrov teaches a

method/system/computer-readable medium for securing a program comprised of a

plurality of interoperable components, the method comprising:

- Extracting **export** information about a function of a first component of the

  program that is callable by at least one other component of the program (fig. 3,

  ref. num 321 and col. 5, lines 14-18);

- Securing the extracted **export** information (fig. 5);

- In response to an attempt by a second component to invoke the function of the

  first component, validating authenticity of the second component (fig. 6);

- If the **authenticity of the** second component is validated, providing access to the function of the first component using the secured extracted information (fig. 6, ref. num 715); **and**

- **Otherwise, blocking the attempt by the second component to invoke the function** (fig. 6, ref. num 714).

Bodrov does not specifically teach securing the extracted information, however, Bodrov does teach extracted export information.

Ferguson teaches securing extracted information (col. 8, lines 38-48), which has been extracted as export information by Bodrov.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine securing extracted information, as taught by Ferguson, with the method of Bodrov. It would have been obvious for such modifications because securing the extracted information prevents access to the information unless permission has been given (see col. 8, lines 38-48 of Ferguson).

Regarding claims 2, 33, and 50, Bodrov as modified by Ferguson teaches further comprising generating a signature for **at least one other component of the program authorized, to call the function of the first** component, so as to enable authentication

of **said one other** component (see col. 4, lines 15-28 of Bodrov).

Regarding <u>claims 3, 16, 34, and 51</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches

wherein said step of generating a signature includes generating a selected one of an

Authenticode signature and an MD5 message digest (see col. 4, lines 15-28 of Bodrov).

Regarding <u>claims 4, 17, and 35</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches

wherein said step of generating a signature includes generating a hash of **said one**

other component and encrypting the hash with a private key (see col. 6, lines 28-40 of

Bodrov).

Regarding <u>claims 5, 18, and 36</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches

wherein said validating step includes decrypting the hash with a public key and

comparing the hash to a known value (see col. 8, lines 58-60 of Ferguson).

Regarding <u>claim 6</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein said

extracting step includes **removing the export** information from an export table of the

first component (see fig. 3, ref. num 321 of Bodrov).

Regarding <u>claims 7 and 56</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein

said extracting step includes removing the function name from an export table of the

first component (see col. 9, lines 43-50 of Ferguson).

Regarding claims 8, 42, and 57, Bodrov as modified by Ferguson teaches

wherein said securing step includes obscuring the function name (see col. 9, lines 58-59

of Ferguson).

Regarding claims 9 and 58, Bodrov as modified by Ferguson teaches wherein

said securing step includes creating a secure export table for securing the extracted

export information (see col. 9, lines 15-20 of Ferguson).

Regarding claim 10, Bodrov as modified by Ferguson teaches wherein said

providing step includes routing a call by the second component to the function of the

first component (see col. 2, lines 6-10 of Ferguson).

Regarding claims 11, 23, 38, and 55, Bodrov as modified by Ferguson teaches

wherein said extracting step includes extracting export information about a function of

the first program specified by a user (see col. 9, lines 43-45 of Ferguson).

Regarding claim 15, Bodrov teaches a method for securing a program comprised

of a plurality of modules, at least one of the modules having export information for

allowing other modules to invoke its program code, the method comprising:

- Generating signatures for at least some of the program's modules (fig. 5, ref. num 608);

- As the program is loaded, validating said signatures so as to verify authenticity of respective modules of the program (fig. 5, ref. num 618);

- For each module having program code that may be invoked by another module, removing that module's export information (fig. 3, ref. num 321 and col. 5, lines 14-18);

- Securely storing any removed export information (fig. 5);

- For each module having its export information removed, blocking any attempt from another module to invoke its program code if the other module cannot be authenticated (fig. 6, ref. num 714); and

- If the other module is authenticated, allowing the attempt to proceed using the securely stored export information (fig. 6, ref. num 715).

Bodrov does not specifically teach securing the extracted information, however, Bodrov does teach extracted export information.

Ferguson teaches securing extracted information (col. 8, lines 38-48), which has been extracted as export information by Bodrov.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine securing extracted information, as taught by Ferguson,

with the method of <u>Bodrov</u>. It would have been obvious for such modifications because

securing the extracted information prevents access to the information unless permission

has been given (see col. 8, lines 38-48 of Ferguson).

Regarding <u>claim 19</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches further comprising

providing a security module for validating authenticity of a module (see col. 8, lines 26-

29 of Ferguson).

Regarding <u>claim 21</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein an

attempt to invoke a module having its export information removed is routed to the

security module (see col. 8, lines 38-41 of Ferguson).

Regarding <u>claim 22</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein the

security module allows the attempt to proceed if the other module making the attempt is

authenticated (see col. 8, lines 49-52 of Ferguson).

Regarding <u>claim 24</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein said

removing step includes removing export information for a particular module specified by

a user (see col. 8, lines 57-62 of Ferguson).

Regarding claim 25, Bodrov as modified by Ferguson teaches wherein said

removing step includes removing information from an export table (see col. 9, lines 43-

45 of Ferguson).

Regarding claim 26, Bodrov as modified by Ferguson teaches wherein said

securely storing step includes obscuring removed export information (see col. 9, lines

58-59 of Ferguson).

Regarding claim 27, Bodrov as modified by Ferguson teaches further comprising

in response to an attempt to invoke program code of a given module, verifying

authenticity of the given module and blocking the attempt if the given module cannot be

authenticated (see col. 8, lines 45-48 of Ferguson).

Regarding claim 28, Bodrov as modified by Ferguson teaches further comprising

after allowing the attempt to proceed, providing for subsequent attempts by the other

module to invoke the program code to directly invoke the program code (see col. 8,

lines 49-52 of Ferguson).

Regarding claim 37, Bodrov as modified by Ferguson teaches wherein the

security module routes the attempt to **invoke** the function **to** the first module **using the**

extracted export information if the second module is authenticated (see col. 8, lines

37-48 and col. 10, lines 2-4 of Ferguson).

Regarding <u>claim 39</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein the

module for extracting removes an export table entry for the function of the first module

(see col. 9, lines 43-45 of Ferguson).

Regarding <u>claim 40</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein the

module for securing creates a secure export table including the extracted **export**

information (see col. 9, lines 15-20 of Ferguson).

Regarding <u>claim 41</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein the

secure export table is created without using a clear text name for the function of the first

module (see fig. 3 and col. 8, lines 12-13 of Ferguson).

Regarding <u>claim 49</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein said

authenticating step includes authenticating the importer based on a digital signature of

the importer (see fig. 6, ref. num 712 of Bodrov).

Regarding <u>claim 52</u>, <u>Bodrov</u> as modified by <u>Ferguson</u> teaches wherein said

authenticating step includes validating digital signature of the importer (see fig. 6, ref.

num 712 of Bodrov).

Regarding claim 53, Bodrov as modified by Ferguson teaches further comprising

authenticating a program module including the exported function before providing

access to the exported function (see fig. 6, ref. num 722 of Bodrov).

Regarding claim 54, Bodrov as modified by Ferguson teaches wherein said

providing step includes routing a call by the importer to the exported function (see fig. 4

of Bodrov, External reference resolved at run-time, the import table calls upon the

export table).

Claims 20, 43, 44, 46, and 47 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bodrov (USPN '006) in view of Ferguson (USPN '826), and further in

view of Idoni (U.S. PG. Pub. No. 2004/0123308).

Regarding claim 20, the combination of Bodrov as modified by Ferguson teaches

all the limitations of claims 15 and 19, above. However, Bodrov as modified by

Ferguson does not teach the security module includes instructions causing the security

module to be initialized before other modules of the programs.

Idoni teaches the security module includes instructions causing the security

module to be initialized before other modules (paragraph 0008).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine initializing the security module prior to other modules,

as taught by Idoni, with the method of Bodrov/Ferguson. It would have been obvious for

such modifications because implicit linkage has the advantage of rapid execution since

the dynamic link loader is pre-loaded into memory and statically linked references are

resolved by the system when a program is loaded (see paragraph 0010 of Idoni).

Regarding claims 43 and 44, the combination of Bodrov as modified by Ferguson

teaches all the limitations of claim 31, above. However, the combination of Bodrov as

modified by Ferguson does not teach wherein the security module inserts executable

code into the second module during initialization of the second module so as to direct

an attempt by the second module to invoke the function of the first module to the

security module.

Idoni teaches wherein the security module inserts executable code into the

second module during initialization of the second module so as to direct an attempt by

the second module to invoke the function of the first module to the security module (fig.

5 and paragraph 0031).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine inserting code to invoke functions prior to other

functions, as taught by Idoni, with the method of Bodrov/Ferguson. It would have been

obvious for such modifications because implicit linkage has the advantage of rapid

execution since the dynamic link loader is pre-loaded into memory and statically linked

references are resolved by the system when a program is loaded (see paragraph 0010

of Idoni).

Regarding claims 46 and 47, the combination of Bodrov as modified by Ferguson

teaches all the limitations of claim 45, above. However, the combination of Bodrov as

modified by Ferguson does not teach the importer comprises another module or another

program.

Idoni teaches wherein the importer comprises another module and wherein the

importer comprises another program (fig. 1b and paragraph 0011).

It would have been obvious to one of ordinary skill in the art, at the time the

invention was made, to combine comprising another module or program, as taught by

Idoni, with the method of Bodrov/Ferguson. It would have been obvious for such

modifications because securing an exported function of a program to provide the

advantage of both implicit and explicit linking (see paragraph 0017 of Idoni).

Conclusion

8.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brandon S. Hoffman whose telephone number is 571-

272-3863. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Nasser G. Moazzami can be reached on 571-272-4195. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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BH

NASSER MOAZZAMI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100